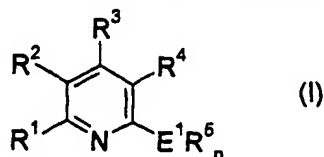


Claims

1. Process for the preparation of substituted pyridine derivatives of formula (I)



5 wherein

R^1, R^2 independently the same or different are H; C_{1-20} -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;

10

$R^3 = CN, NO_2, C_{1-20}$ -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;

15

$R^4 = E_n R_m^6$ in which

If $n = m = 1$ than $E = S$ and $R^6 = C_{1-20}$ -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;

20

If $n = 0$ and $m = 1$ than $R^6 = H, C_{1-20}$ -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;

$E^1 = O, N$

25

$R^6 = H$

$n = 1$ for $E^1 = O$ und 2 for $E^1 = N$

30 comprising reaction of a α - β -unsaturated carbonyl compound of formula (II)

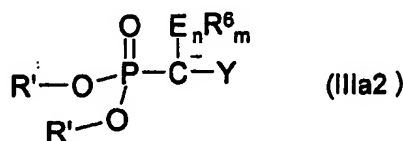
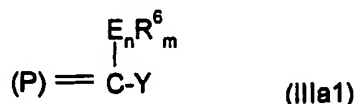


wherein

R^1 , R^2 and R^3 have the above defined meaning;

5 $G = -NH_2$ or a leaving group

with a Wittig reagent or Horner-Wadsworth-Emmons reagent of formula (III)



10 wherein

(P) = $P(Ar)_3$, with Ar = substituted or preferably unsubstituted C_{6-20} aryl, R' = is
 15 equal or different independently means C_{1-20} alkyl, branched or straight or cyclic,
 or C_{6-20} aryl;

$E_n R^6_m$ = in which

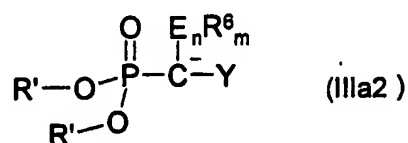
20 if $n = m = 1$ than $E = S$ and $R^6 = C_{1-20}$ -alkyl (branched or straight chain or cyclic);
 C_{6-20} -aryl - which each of those may be substituted with one or more of the follow-
 ing groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F; Cl; Br; I;
 if $n = 0$ and $m = 1$ than $R^6 = H$, C_{1-20} -alkyl (branched or straight chain or cyclic);
 C_{6-20} -aryl - which each of those may be substituted with one or more of the follow-
 25 ing groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F; Cl; Br; I;

$Y = -CN$; $-C(O)NH_2$; $-C(O)OR^7$ with $R^7 =$ as defined for R^1 above, except H

in the presence of a base and if

- 30 i) $Y = -CN$ or $C(O)NH_2$, $G =$ a leaving group and the base is an alcoholate,
 subsequent acidic catalyzed, with zeolithes catalyzed or basic catalyzed cy-
 clization;
 ii) $Y = -C(O)-OR^7$, $G =$ a leaving group and the base is an alcoholate, subse-
 quent basic cyclization in the presence of ammonia.

2. Process according to claim 1, wherein $R^1 = R^2 = H$ and $R^3 =$ electron withdrawing group.
- 5 3. Process according to claims 1 to 2, wherein $R^1 = R^2 = H$ and R^3 is a partially or fully fluorinated C_{1-8} -alkylgroup.
4. Process according to claims 1 to 3, wherein $R^3 = -CF_3$.
- 10 5. Phosphorus compounds of formula IIIa2



in which

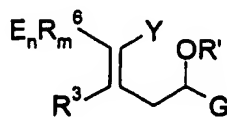
- 15 R' = is equal or different independently means C_{1-20} alkyl, branched or straight or cyclic, or C_{6-20} aryl

$E_nR_m^6 =$ in which

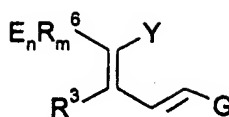
- 20 if $n = m = 1$ than $E = S$ and $R^6 = C_{1-20}$ -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F; Cl; Br; I;

- 25 $Y = -CN$; $-C(O)NH_2$; $-C(O)OR^7$ with $R^7 = C_{1-20}$ -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which each of those may be substituted with one or more of the following groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F; Cl; Br; I.

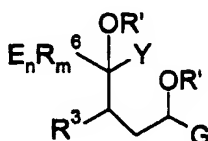
6. Compounds of the formula IV-1 to IV-4



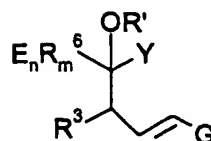
IV-1



IV-2



IV-3



IV-4

in which the variables have the following meanings:

5

$E_n R_m^6$ = in which

- if $n = m = 1$ than $E = S$ and $R^6 = C_{1-20}$ -alkyl (branched or straight chain or cyclic);
 C_{6-20} -aryl - which each of those may be substituted with one or more of the follow-
 10 ing groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;
 if $n = 0$ and $m = 1$ than $R^6 = H$, C_{1-20} -alkyl (branched or straight chain or cyclic);
 C_{6-20} -aryl - which each of those may be substituted with one or more of the follow-
 ing groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;

- 15 $Y = -CN; -C(O)NH_2; -C(O)OR^7$ with $R^7 = C_{1-20}$ -alkyl (branched or straight chain or cyclic);
 C_{6-20} -aryl - which each of those may be substituted with one or more of the follow-
 ing groups: F, Cl, Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I.

- 20 R' is equal or different independently means C_{1-20} alkyl, branched or straight or cyclic

- $R^3 = CN, NO_2, C_{1-20}$ -alkyl (branched or straight chain or cyclic); C_{6-20} -aryl - which
 each of those may be substituted with one or more of the following groups: F, Cl,
 25 Br, I, C_{1-20} -alkoxy, C_{6-20} -aryloxy, amino; F, Cl, Br, I;

$G = -NH_2$ or a leaving group.

7. Compounds as claimed in claims 5 or 6 as intermediates in the synthesis of pyridine derivatives.